ISSUE 44 | 07 MAY 2025

Space Beacon

ESA's Biomass satellite launches aboard Vega-C to map global forests and monitor carbon stocks using advanced radar technology

INDIAN TECHNOLOGY CONGRESS ASSOCIATION

Stay up-to-date with the latest in spacetech

Orbital

Lead with the most significant celestial events and discoveries

Did you Know
Earth has the only moon with a poetic name, unlike the moons of other planets, which have names derived from mythology, Earth's moon is simply called "the Moon" (but its Latin name, Luna, has its own charm)

Thousands of Baby Stars Flee Birthplace in Chaos

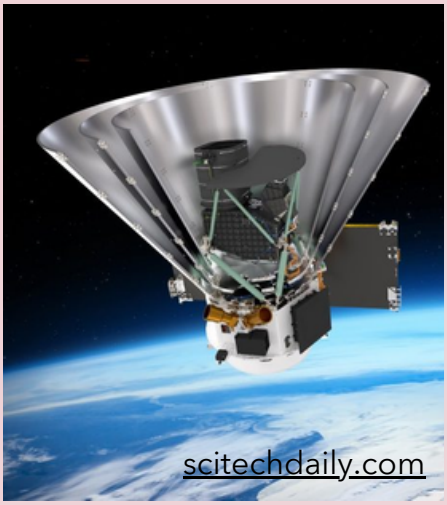
In a groundbreaking find, scientists have spotted thousands of newborn stars racing away from their stellar nursery in the Orion Nebula. Detected via Spitzer Space Telescope, these infant stars are likely being ejected by chaotic gravitational interactions—akin to cosmic pinball. The discovery challenges traditional views of star formation, suggesting that such stellar escapees may be common throughout the galaxy. This insight reshapes how astronomers understand the early life of stars and the dynamic environments they emerge from.

China's Laser Hits Moon in Daylight Breakthrough

In a historic leap for space technology, China has successfully fired a high-powered laser at the Moon in broad daylight, marking an unprecedented breakthrough in deep-space targeting. This achievement, accomplished by the Satellite Laser Ranging Observatory in Qinghai, demonstrates China's growing capabilities in precision space tracking and long-distance communications. Striking the lunar surface over 384,000 km away during daytime—when laser dispersion is highest—shows the system's extraordinary accuracy and power.

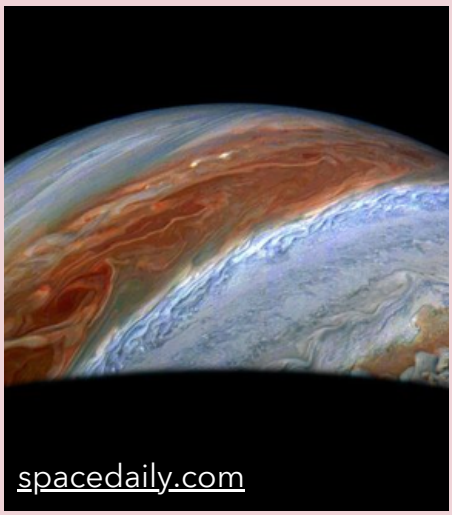
SPHEREx Powers: NASA's 3D Universe Mission Begins

The SPHEREx infrared telescope is now operational, embarking on a groundbreaking mission to map the universe in 3D. This advanced telescope will scan the entire sky every six months, collecting infrared data from over 300 million galaxies and 100 million stars. The mission promises to reveal crucial insights into galaxy formation, the origins of life, and the universe's evolution. By unlocking hidden cosmic secrets, it is set to revolutionize our understanding of the cosmos.



Massive Cosmic Flares Reveal Hidden Gold Mines

Astronomers have discovered intense cosmic flares bursting from neutron star collisions, offering a rare glimpse into one of the universe's richest sources of gold and heavy elements. Using NASA's space telescopes, scientists observed flares ten times brighter than previous kilonova events. These findings support theories that such stellar mergers are key to creating precious metals. The dramatic brightness and energy output challenge existing models and open new doors in astrophysics and element formation.



Juno Sheds Light on Jupiter's Hidden Secrets

Recent data from Juno mission has revealed groundbreaking discoveries about Jupiter and its moon Io. The spacecraft's close flybys have provided detailed insights into the planet's deep atmospheric layers and the complex subsurface of Io, known for its volcanic activity. Juno's findings highlight Jupiter's powerful magnetic field and its interaction with Io's volcanoes. These revelations not only deepen our understanding of the gas giant but also offer valuable clues about the formation and evolution of planetary systems.

Exploring Titan, Dragonfly Mission to Search for Life

The ambitious mission journey to Saturn's moon Titan, where a drone-like spacecraft will explore the moon's diverse landscapes. With its thick atmosphere and methane lakes, Titan holds the key to understanding prebiotic chemistry and the potential for life beyond Earth. Dragonfly aims to uncover the mysteries of this intriguing world, offering valuable insights into the conditions that could support life on other planets. This mission is a significant leap forward in space exploration, promising exciting discoveries.

Exoplanets abound, with new Earth-like worlds identified

Genspace

Cover broader space news not fitting into other categories

Did you Know
The Great Red Spot Jupiter's iconic storm, larger than Earth, has been raging for centuries

Volcanic Eruptions Disrupt Satellites: Research Findings

Recent findings from the University of Science and Technology of China (USTC) reveal how volcanic eruptions can disrupt satellite operations. The 2022 Hunga Tonga-Hunga Ha'apai eruption sent atmospheric waves into space, affecting satellite orbits. Researchers identified secondary gravity waves as the key driver of these disturbances, offering insights for better satellite safety and space weather forecasting. This breakthrough could help operators predict orbital changes and prevent collisions.

Lockheed Martin Powers Artemis II Moon Mission

Lockheed Martin has officially completed the Orion spacecraft for Artemis II mission—the first crewed lunar flight since Apollo. The spacecraft, comprising the crew module, service module, and launch abort system, is now undergoing final testing before being integrated with NASA's Space Launch System. Artemis II aims to orbit the Moon with four astronauts, paving the way for deeper space exploration. This milestone signifies a critical step toward long-term lunar goals, including the Artemis III landing.

NASA Wants You to Explore 500,000 Galaxies

It has released a treasure trove of 500,000 galaxy images and is inviting the public to help classify them. These stunning cosmic snapshots come from the James Webb Space Telescope and other observatories, part of the "Galaxy Cruise" citizen science project. Volunteers can dive into deep space, identify galaxy shapes, and contribute to groundbreaking astrophysics research. You don't need a degree—just curiosity and an internet connection. It's a rare chance to directly assist scientists in unlocking the mysteries of the universe.

Twelve Space Firms Join Key US Defense Mission

The U.S. Space Force has selected 12 space and satellite companies under its latest Space Test Program (STP) contract, aiming to advance next-gen tech for national security. The selected firms will support STP's Rapid Agile Launch Initiative, helping to develop and deliver experimental space capabilities at speed. This move emphasizes the Space Force's growing collaboration with commercial partners to enhance space innovation, resilience, and agility.

Scientists Create World's First Black Hole Bomb in Lab

The researchers have successfully recreated a "black hole bomb" in a laboratory—a phenomenon previously only theorized. By using sound waves in a ring of fluid, they mimicked how energy can exponentially grow near a rotating black hole due to superradiance. This experiment offers exciting insights into black hole mechanics, quantum physics, and the extreme environments of space. It's a monumental leap in understanding how the universe behaves under extreme conditions, and could reshape theories of energy extraction from black holes.

Historic All-Female Spacewalk Marks Milestone

Two astronauts, Kaylyn Johnson and Emma Harris, have successfully completed a nearly six-hour spacewalk outside the International Space Station (ISS). This historic achievement marks the first time in history that an all-female team has conducted a spacewalk. Their mission involved the installation of critical equipment, ensuring the ISS's systems remain operational. The spacewalk is a significant step forward in showcasing the contributions of women in space exploration.

Satellogy

Focus on recent and upcoming satellites and launches

Did you Know
Mariner 2 (1962 - USA), the first spacecraft to successfully fly by another planet, Venus, providing groundbreaking data about interplanetary conditions

Sidus Space and Saturn Join Forces for GEO Innovation

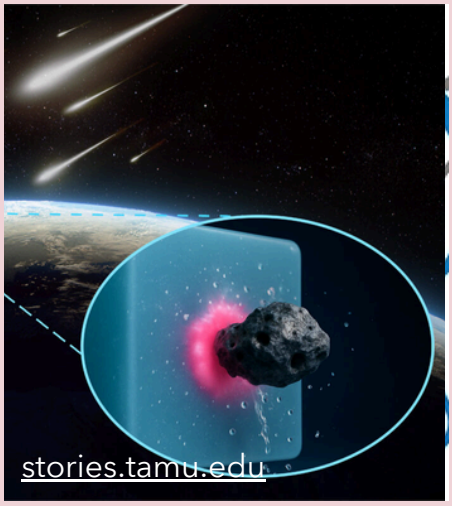
Sidus Space has partnered with Saturn Satellite Networks in a groundbreaking MOU to develop the next-generation GEO satellite platform. This collaboration aims to advance the capabilities of GEO satellite technology, unlocking new opportunities in the space industry. By combining expertise and resources, both companies will focus on creating innovative solutions that will reshape satellite infrastructure, enabling efficient communication, improved coverage, and enhanced data transmission. This partnership will elevate satellite, advancing technology and global connectivity.

Satellite Tech Helps Farmers Cut Crop Losses Fast

Indian farmers are embracing a debt-free future, thanks to satellite remote sensing technology. By monitoring crop health, soil moisture, and weather changes in real-time, satellites enable farmers to make smarter, faster decisions—preventing crop failure and minimizing financial risks. Startups like Cropin and SatSure are at the forefront, offering precision agriculture tools that help boost yields and reduce dependency on loans. With better planning and early warnings, this tech revolution is transforming farming into a more resilient and sustainable livelihood.

ISRO's Summer Sky Show Missions Take Flight

Indian Space Agency is gearing up for a packed launch schedule from May to July 2025, showcasing India's ambitious strides in space exploration. Key missions include the INSAT-3DS meteorological satellite, the PSLV-C59 carrying Singaporean payloads, and the prestigious Gaganyaan abort mission as part of the country's crewed spaceflight preparations. Also in the pipeline is the second test of the RLV-LEX reusable launch vehicle and the third developmental flight of SSLV. These highlight strengths in weather, global ties, and crewed missions.


stories.tamu.edu

Self-Healing Polymer Boosts Satellite Durability

Researchers at Texas A&M have developed a breakthrough self-healing polymer that can autonomously repair itself without external intervention—a feature never seen before at any scale. For satellites, this could be transformative. From micrometeorite damage to extreme temperature fluctuations, space environments are brutal. But this new polymer could allow satellite structures and components to recover from damage in real time, extending their lifespan, reducing maintenance needs, and enabling smarter, more resilient spacecraft.


spacedaily.com

Space Exploration Boosts Global Security & Governance

Space exploration is rapidly transforming global security and governance. As nations and private entities expand their presence beyond Earth, the need for comprehensive legal frameworks becomes paramount. Issues like satellite collisions, space debris, and resource exploitation on celestial bodies highlight the urgency for international regulations. With over 70 countries operating space agencies and private companies like SpaceX advancing space missions, establishing clear laws is essential to prevent conflicts and ensure sustainable exploration.

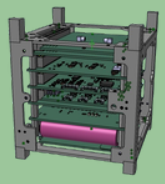

retailtimes.co.uk

Satellite Tech Transforms Global Logistics and Tracking

Satellite technology is reshaping the global logistics and cargo landscape with real-time tracking, improved visibility, and predictive analytics. From monitoring routes to minimizing delays, satellites are helping logistics firms increase efficiency and security. This revolution enhances global supply chains by offering end-to-end tracking, aiding in temperature control for perishables, and streamlining border processes. As connectivity improves with LEO satellites, even remote regions become part of the logistics network.


Mapping the Earth and observing satellites with their vital data

CubeTech



Showcase innovative CubeSat missions and unique payloads

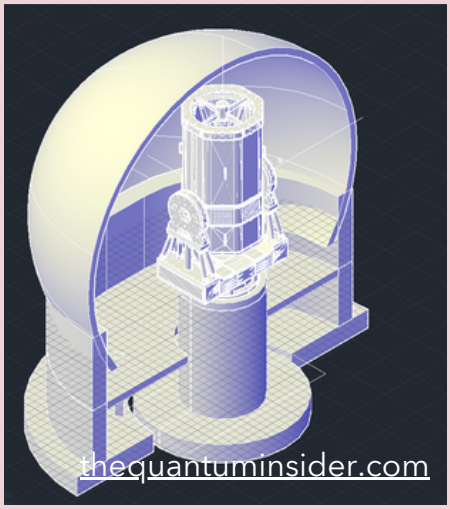
Did you Know
CubeSats significantly reduce the cost of satellite deployment, democratizing access to space for smaller organizations

South Korea's CubeSat to Ride Artemis II Mission

South Korea is set to mark a milestone in space exploration by sending a CubeSat aboard Artemis II mission, the first crewed flight of the Artemis program. The miniature satellite, developed by the Korea Astronomy and Space Science Institute (KASI), aims to monitor cosmic radiation in lunar orbit. This collaboration highlights South Korea's growing role in international space science and deep-space research. It is currently planned for launch in late 2025, will carry astronauts around the Moon and test key systems for future lunar missions.

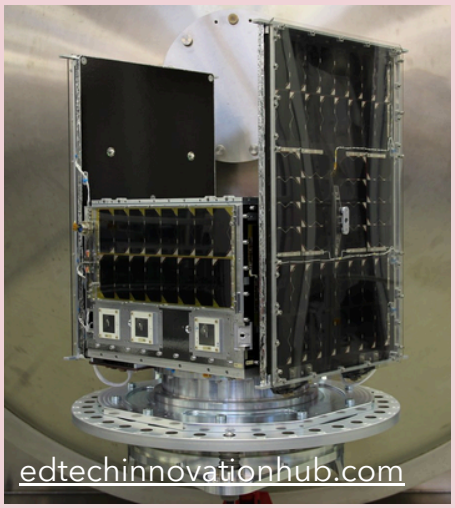
UK's First Optical QKD Station Now Operational

Heriot-Watt University has launched the UK's first £3M quantum satellite research facility, marking a breakthrough in secure communications. Located in Edinburgh, the Optical Ground Station supports Quantum Key Distribution (QKD) via satellites—enhancing encryption capabilities for defense and finance sectors. The station enables ultra-secure data transfer using quantum physics, paving the way for future global quantum networks. This milestone positions the UK as a leader in quantum satellite communications and space cybersecurity.



SFL Missions Ignites New Era in Small Satellites

Founded by Dr. Robert E. Zee is revolutionizing small satellite development by building on the legacy of the Space Flight Laboratory (SFL). With over 86 successful missions and 370+ years of cumulative spacecraft performance, the company is set to deliver affordable, innovative, and globally accessible nano-, micro-, and small satellites. Their new Flex Production program offers clients the flexibility to choose their spacecraft's build location, enhancing customization. Also launching an Apprenticeship Program to train future aerospace engineers


edtechinnovationhub.com

ASPERA Satellite Bus Ready for Launch Backed by NASA

The ASPERA mission, initiative led by the University of Arizona. ASPERA (AeroSpace Planetary Emission Radiance Explorer) aims to study how stellar environments influence planetary evolution. SFL's 180-kilogram, ESPA-class bus is tailored for deep-space missions, including propulsion, power systems, and communications. The mission will investigate the atmospheres of Venus and exoplanets to gain insights into planetary habitability. Scheduled for a 2025 launch, ASPERA marks a major milestone in compact deep-space satellite development.

satnews.com

DARPA Seeks Small Satellites to Scout the Moon

DARPA has unveiled a groundbreaking solicitation under its new LASSO (Lunar Architecture Study and System Objectives) program, inviting proposals for small satellite orbiters to assess lunar resources. This move is part of a broader push to enable sustained U.S. presence and activity on the Moon. The initiative calls for innovative, low-cost lunar assays capable of identifying water ice, minerals, and other key elements. With LASSO, DARPA aims to fast-track technological pathways that support space logistics, in-situ resource utilization, and long-term lunar operations.

businesswire.com

CubeSat Boom Sparks Power Supply Market Surge

The CubeSat and small satellite revolution is powering a new wave of opportunities in the space power supply industry. According to a fresh report by ResearchAndMarkets.com, the market is projected to grow significantly through 2034, driven by increasing demand for compact, efficient power solutions. As more organizations deploy low-cost satellites for defense, research, and commercial use, the need for innovative power architectures—from solar arrays to batteries—is rapidly accelerating.

The 75SSM

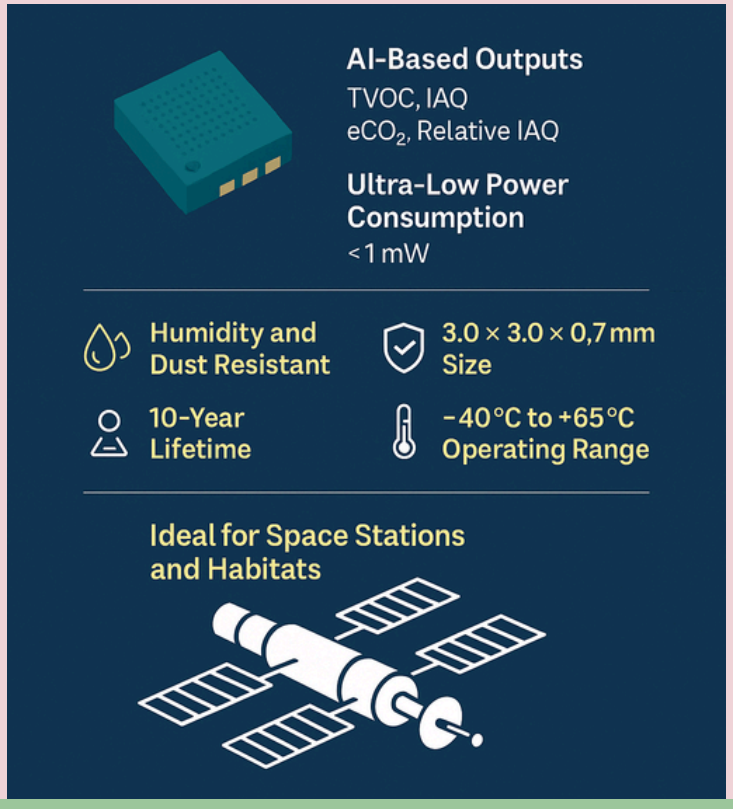
SSM: Students' Satellites Mission

Update readers on our ITCA internal space-based innovations

Did you Know
75SSM is crafting the future of space exploration, redefining satellite engineering by blending creativity, precision, and the spirit of exploration.

ZMOD4410 Gas Sensor Module: Advanced Indoor Air Quality Monitoring

CRSat gives students hands-on experience with satellite tech, mirroring CubeSats. It integrates solar power, sensors, and real-time data collection, bridging theory and practice to build skills in power management, data analysis, and communication for real-world space challenges. The ZMOD4410 gas sensor module is designed for advanced indoor air quality (IAQ) monitoring, detecting Total Volatile Organic Compounds (TVOC) and estimating CO_2 levels. It features AI-based outputs, ultra-low power consumption, and multiple operation modes, including IAQ 2nd Gen for accurate TVOC detection, ultra-low power (ULP), PBAQ for public building air quality standards, and Sulfur Odor mode for distinguishing sulfur-based odors. The module operates in challenging conditions, such as humidity and dust, with a siloxane-resistant build and a long-lasting 10-year lifetime. Ideal for applications in space stations, space habitats, or research platforms to monitor the air quality in confined environments, the ZMOD4410 offers real-time, reliable air quality data. Its compact size and a wide operating temperature range, fits for efficient solution for enhancing indoor air quality management.



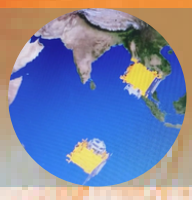
Space@India

Glimpses into India's space chronicle, every week

Did you Know
The GSAT satellites enhance communication services, including internet access and broadcasting, and support India's socio-economic development

India marks a historic achievement with the maiden flight Trials of its stratospheric airship platform, paving the way for aerospace innovation

Read more at: thehindu.com



Indian satellites are practicing dogfights in space to enhance defense capabilities and protect assets

Read more at: ndtv.com

IAF to enhance national security with new pseudo-satellites and cutting-edge army missile defense system

Read more at: tribuneindia.com

Indian superfoods in space: Shubhanshu Shukla's groundbreaking experiment with moong, methi, and more

Read more at: economictimes.com

ISRO prepares for groundbreaking second space docking mission, seeks government approval soon

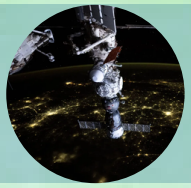
Read more at: news18.com

DRDO delivers critical parachutes for Gaganyaan mission: A key step in astronaut safety

Read more at: mathrubhumi.com

Bharat's historic human spaceflight mission set for 2027 Launch, chief Dr Narayanan

Read more at: newspoint.com



Tougher satellite regulations in India impact starlink and OneWeb's expansion strategies

Read more at: spacenews.com

75 Students' Satellites Mission

ITCA's Engineering Prowess and Ingenuity

ITCA: Pioneering India's Tech Future

Innovating India's tech for 22 years, we pioneered the '75 Students' Satellites Mission' and made a global impact in space tech, precision agriculture, and Industry 4.0.

Upcoming...

Events

European Navigation Conference (ENC)

20- 22 May 2025
Manchester, UK
enc2025

UK Space Conference

16 - 17 July 2025
London, UK
uksc2025

Small Satellite Conference

10 - 13 Aug 2025
Utah, USA
smallsat2025

Launches

SpaceX | Falcon 9 Block 5 | Starlink Group 15-3

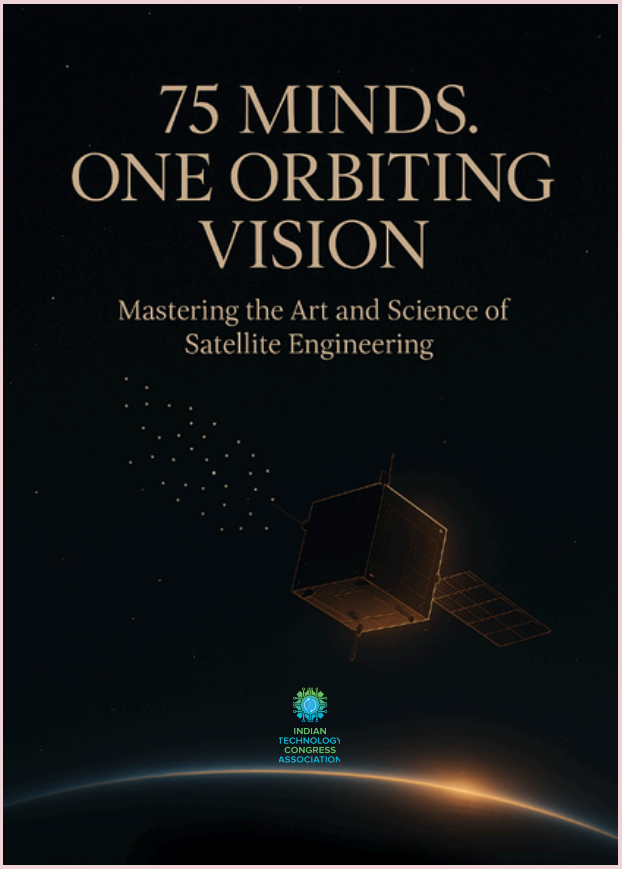
10 May 2025 05:31 IST
SLC-4E, Vandenberg SFB, California, USA

Rocket Lab | Electron/Curie | The Sea God Sees

17 May 2025 13:45 IST
Māhia Peninsula, New Zealand

ISRO | PSLV-XL | EOS-09

18 May 2025 05:30 IST
First Launch Pad, Satish Dhawan Space Centre, India



SPACE BEACON
cosmic cadences on our radar

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